

### REMARKS

The applicant respectfully requests reconsideration in view of the amendment and the following remarks. Since the Examiner was not convinced over the applicant's previous arguments (see page 3 of the office action). The Examiner stated that the applicant did not show unexpected results when the reaction mixture comprises at least 5 mol %. The applicant has deleted this feature from the claims. Support for amended claim 1 can be found in claims 1 and 3. Support for newly added claim 23 can be found in claim 1 and in the specification at page 4, last paragraph. Support for newly added claims 24 and 25 can be found in the specification at page 2, lines 26-29 original claim Support for newly added claim 26 can be found in the original claim 3. Support for newly added claim 27 can be found in the specification at page 4, last paragraph. No new matter has been added.

The application contains two independent claims (claims 1 and 23). The applicant has added 5 claims (claims 23-28) and cancelled one claim (claim 3). The applicant authorizes the USPTO to charge (\$204.00) for the extra 4 total claims added to the application over twenty.

Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuazon et al., Journal of Atmospheric Chemistry 17:179-199, 1993 (Tuazon). The applicant respectfully traverses this rejection.

The applicant has two independent claims (claims 1 and 23).

With respect to claim 1, Tuazon teaches away from the applicant's claimed invention. Claim 1 requires wherein 0.05 to 0.20 mol of elemental chlorine is present per mole of  $\text{CHClF}_2$  (R22) or  $\text{CHF}_3$ .

The experiments in the publication of Tuazon are performed at 298K and 740 Torr (= 98,658 Pa) (described at page 181 top). Using these values the ideal volume and the quantity of molecules per  $\text{cm}^3$  pure material can be calculated.

calculation ideal volume:  $25.11 \text{ l/mol (@ 293K \& 98658 Pa (Tuazon))}$

ideal volume  **$2.39787\text{E}+19$  molecules per  $\text{cm}^3$  pure material**

### **(1) Calculation of the $\text{Cl}_2$ concentration in Tuazon**

(1) In the publication Tuazon the contents of  $\text{Cl}_2$  (described at page 183 top) is expressed in molecules per  $\text{cm}^3$ , the amount is  **$4.1 \times 10\text{E}+14$  molecules per  $\text{cm}^3$** .

The amount expressed in molecules per  $\text{cm}^3$  can be converted in an amount expressed in ppm by using the formula  $(4.1 \times 10\text{E}+14 * 1000000) / [\text{ideal volume ( } 2.39787\text{E}+19 )] =$  **17.1 ppm**

**$\text{Cl}_2$**

### **(2) Comparison of the R22 concentrations**

(1) In the publication Tuazon, the content of  $\text{CHF}_2\text{Cl}$  (R22) (described at page 183 top) is expressed in molecules per  $\text{cm}^3$ , the amount is  **$1.24 \times 10\text{E}+14$  molecules per  $\text{cm}^3$** .

The amount expressed in molecules per  $\text{cm}^3$  can be converted in an amount expressed in ppm by using the formula  $(1.24 \times 10\text{E}+14 * 1,000,000) / [\text{ideal volume ( } 2.39787\text{E}+19 )] =$  **5.2 ppm**

**R22 (FORMULA 1)**

### **(3) Comparison molar ratio $\text{Cl}_2$ to R22**

(1) Therefore taken the values expressed in ppm for  $\text{Cl}_2$  and R22 :  
molar ratio  $\text{Cl}_2$  to R22 in Tuazon =  $17.1 \text{ ppm} / 5.2 \text{ ppm}$  is equal to **3.31**

(2) according to amended claim 1 of the present invention : molar ratio  $\text{Cl}_2$  (ranges from 0.05 to 0.20 mol) to R22 (1 mole) which is always  **$\leq 1$** .

Therefore, Tuazon teaches away from the applicant's claimed ratio.

### **Claim 23**

The applicant's independent claim 23, claims a ratio of  $\text{CHClF}_2$  or  $\text{CHF}_3$  to oxygen content is at most 1:1

#### **(4) Comparison molar ratio O<sub>2</sub> to R22**

In the publication Tuazon (described at page 181 top): synthetic air 20% O<sub>2</sub> (0.2), 80% N<sub>2</sub> (0.8) has been used.

In order to calculate the molar ratio O<sub>2</sub> to R22, the following formula has been used: [ 0.2 (fraction of O<sub>2</sub>) \* 1000000] / amount of R22 in ppm ( FORMULA 1 )

This means [0.2 (fraction of O<sub>2</sub>) \* 1000000] / [(1.24 x 10E+14 \* 1000000) / (2.39787E+19) ] and therefore in Tuazon the molar ratio O<sub>2</sub> to R22 is equal to 38,675.35. Therefore, Tuazon has about 38,675 times O<sub>2</sub> in excess, using synthetic air 20% O<sub>2</sub>, 80% N<sub>2</sub>!

The molar ratio R22 to O<sub>2</sub> in one aspect of the invention is up to 1:1, in particular from 1:0.4 to 1:1 (see dependent claim 27). Therefore, the applicant uses at most 1:1 O<sub>2</sub>. The O<sub>2</sub> is not in excess in the applicant's claimed invention.

Therefore, Tuazon has about 38,675 times O<sub>2</sub> in excess, using synthetic air 20% O<sub>2</sub>, 80% N<sub>2</sub>!

In view of the above amendment, applicant believes the pending application is in condition for allowance.

A one month extension has been paid. \$204.00 has been paid for the extra four claims over twenty that have been added. Applicant believes no additional fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 13146-00004-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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